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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/294,617	04/19/1999	ANDREW T. JENNINGS	TN137	6329

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EXAMINER
KENDALL, CHUCK O

ART UNIT	PAPER NUMBER
2122	

DATE MAILED: 09/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/294,617	JENNINGS ET AL.	
	Examiner	Art Unit	
	Chuck O Kendall	2122	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 18-31* is/are rejected.

7)☒ Claim(s) *16 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Examiners Response

This Office Action is the response to the communication received on July 25, 2002 Amendment under 37 CFR § 1.111.Reconsideration of the instant application is requested by applicants. All such supporting documentation has been placed of record in the file. Claims 1-31 are pending in this application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horwat USPN 6,021,275 in view of Sreedhar et al. USPN 6,182,284 B1.

With regards to Claim 1,Horwat discloses emulating the execution of a target program comprising instructions of an instruction set of a target computer on a host computer having a different instruction set, said method comprising (3:1-5) and translating the instructions of the target program into a series of instructions of an intermediate instruction set, the intermediate instruction set being optimized for interpretation on the host computer (7;3-13),executing the

series of instructions of the intermediate instruction set by interpretation on the host computer (23:18:20). Horwat doesn't explicitly disclose translating statically optimizing into intermediate instructions. However Sreedhar discloses this feature [1:7-15]. Therefore, one of ordinary skill in the art would have obviously been motivated to modify Horwat's limitations with Sreedar to implement the instant claimed invention because translating optimized intermediate instructions makes the program run more efficiently.

Regards, to Claim 2 according to claim 1 wherein the intermediate instruction set comprises a plurality of control words that are derived, at least in part, by mapping control words of the instruction set of the target machine into the fundamental word size of the host machine (Horwart, 21:62-67 to 22:1-5)

Regards, to claim 3 according to claim 1, wherein the intermediate instruction set comprises a plurality of control words that are derived by redefining control words of the target computer to minimize the number of masking and shifting operations needed to decode the plurality of control words of the intermediate instruction set. (21:62-67 to 22:1-5, also see 20-25 for word contained in each record)

Regards, to claim 4 according to claim 1, wherein the intermediate instruction set comprises a plurality of different types of control words having formats defined to minimize the time needed to determine the type of a control word. (20:45-63)

Regards, to Claim 5 as recited in claim 1, wherein the intermediate instruction set comprises a plurality of controls words derived from control words of the instruction set of the target machine in a manner that reduces the number of different forms of control words in the intermediate instruction set. (24:28-35)

Regards, to claim 6 as recited in claim 1, wherein a code structure of the intermediate instruction set comprises code words have a fixed length that matches the fundamental word size of the host machine. (24:53-55)

Regards, to claim 7 as recited in claim 1 wherein the instructions of the intermediate instruction set have a fixed length and do not cross code word boundaries. (24:63-65, see aligning on byte boundaries)

Regards, to claim 8 as recited in claim 1, wherein zero-address instructions of the instruction set of the target machine for pushing data onto a stack for use in a subsequent zero-address instruction operation are incorporated as explicit addresses into a new instruction in the intermediate instruction set for performing that operation, thereby reducing the number of different instructions in the intermediate instruction set. (see table on the bottom of column 30 for allocating stack and zero address instruction).

Regards, to claim 9 see reasoning in claim 1.
Regards, to claim 10 see reasoning in claim 2.
Regards, to claim 11 see reasoning in claim 3.
Regards, to claim 12 see reasoning in claim 4.
Regards, to claim 13 see reasoning in claim 5.
Regards, to claim 14 see reasoning in claim 6.
Regards, to claim 15 see reasoning in claim 7.
Regards, to claim 18 see reasoning in claim 8.
Regards, to claim 19 see reasoning in claim 1.
Regards, to claim 20 see reasoning in claim 1.
Regards, to claim 21 see reasoning in claim 3.
Regards, to claim 22 see reasoning in claim 4.
Regards, to claim 23 see reasoning in claim 5.
Regards, to claim 24 see reasoning in claim 6.
Regards, to claim 25 see reasoning in claim 7.
Regards, to claim 26 see reasoning in claim 8.

Per claim 1, Horwat further discloses with Regards, to claim 27 a method for defining an intermediate instruction set based on the instruction set of a target machine for use in an emulation system in which a target program, which comprises instructions of the target machine instruction set, is executed by emulation on a host computer having a different instruction set by

(i) performing a static translation of the instructions of the target program into a series of instructions of the intermediate instruction set, and then (7;3-13)

(ii) executing the series of instructions of the intermediate instruction set by interpretation on the host computer, wherein the intermediate instruction set is optimized for interpretation on the host computer, said method comprising: (7;3-13)

mapping control words of the instruction set of the target machine into the fundamental word size of the host machine to derive a set of control words of the intermediate instruction set; (21:62-67 to 22:1-5)

redefining control words of the instruction set of the target machine to reduce the number of different forms of control words in the intermediate instruction set; and (21:62-67 to 22:1-5, also see 20-25 same paragraph and 24:28-35)

defining a code structure of the intermediate instruction set in which code words of that structure have a fixed length that matches the fundamental word size of the host machine. (24:53-55)

Regards, to claim 28 see reasoning in claim 3.
Regards, to claim 29 see reasoning in claim 4
Regards, to claim 30 see reasoning in claim 6.
Regards, to claim 31 see reasoning in claim 8.

Allowable subject matter

Claims 16,& 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

wherein the code translator runs as a user mode process under control of a host operating system on the host computer, and wherein the interpreter runs as a kernel mode driver thread under the host operating system.

wherein the emulation system may comprise multiple instances of the interpreter each running as a different thread in the kernel space of the host operating system

Correspondence Information

Any inquires concerning this communication or earlier communications from the examiner should be directed to Chuck O. Kendall who may be reached via telephone at (703) 308-6608. The examiner can normally be reached Monday through Friday between 8:00 A.M. and 5:00 P.M. est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Greg Morse can be* reached at *(703) 308-4789.*

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is *(703) 305-3900.*

For facsimile (fax) send to 703-7467239 official and 703-7467240 draft

Chuck O. Kendall

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TUAN Q. DAM
PRIMARY EXAMINER